

### QUICK START

Great video is ready-made; great audio is harder to get, but a SSE 35 makes it a lot easier. Read at least this boxed section and you'll be on your way toward great audio.

Hook-up is intuitive: In from the decoder; Out to the amplifiers. Just follow the silkscreened legends on the rear of the unit. Use only high-quality RCA cables.

Set your Dolby Pro-Logic decoder's center channel to NORMAL Mode.

Familiarity with any other graphic equalizer makes you familiar with the SSE 35. If this is your first equalizer, be gentle; it can overwhelm you. Use of a realtime analyzer is recommended; alternatively use an SPL meter and a test disc—then try your ears.

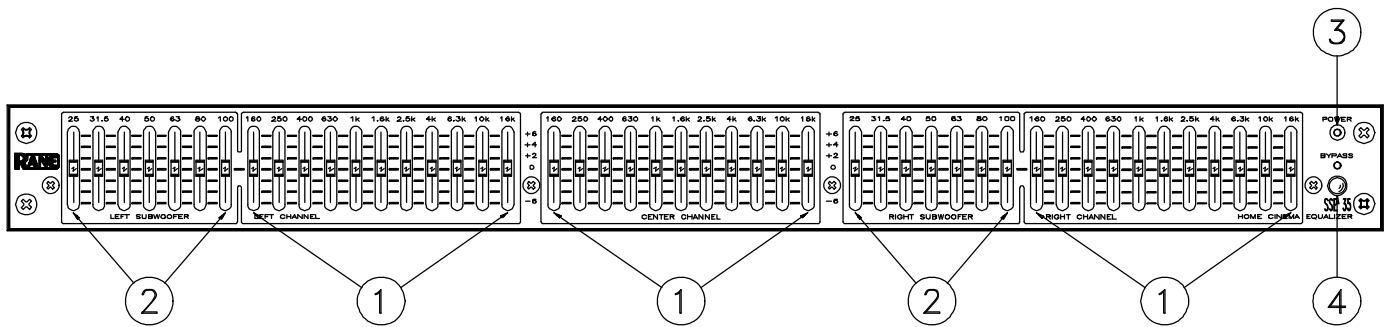
Use the **BYPASS** switch as an aid in comparing equalized results with unequalized results. Pushbutton *in* and locked (LED *on*) is the bypassed (unequalized) mode; pushbutton *out* and unlocked (LED *off*) is the normal equalized mode. See the included Rane Note 132 for stereo or mono subwoofer tips. See the Operating Instructions on the back page for basic alignment info.

Install the supplied security cover after completing all settings. Be sure the **POWER** light fits snugly into the hole in the security cover.

**NEVER CONNECT ANYTHING EXCEPT AN APPROVED RANE POWER SUPPLY TO THE RED MODULAR JACK ON THE REAR OF THE UNIT.** This is an AC input and requires a power supply *exactly* like the one originally packed with your unit. See the full explanation of the power supply requirements elsewhere in this manual.

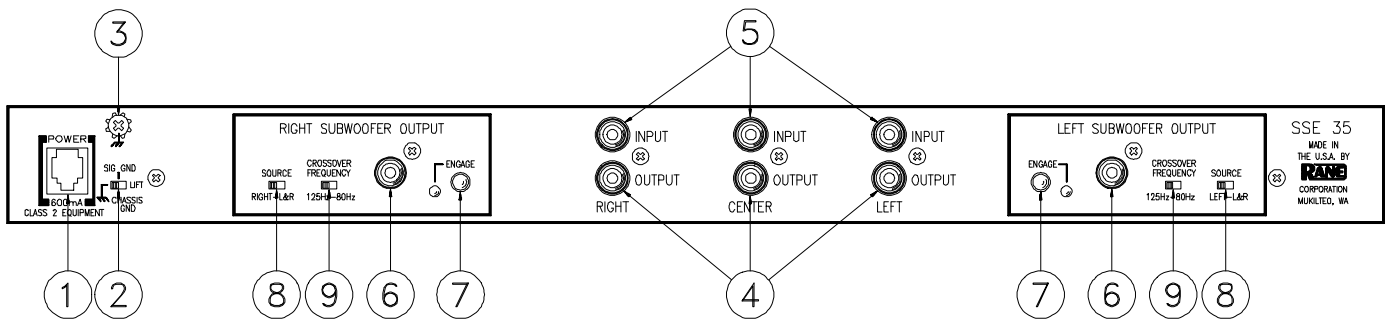
Have fun.

## FRONT PANEL DESCRIPTION



- 1. LEFT, RIGHT & CENTER CHANNEL equalizer controls.** Each of the Left, Right and Center Channels have eleven slide controls used to set the individual levels of the 2/3-octave spaced (160 Hz-16 kHz) constant-Q filters. Their range is  $\pm 6$  dB. The grounded center-detent design ensures each filter is off when positioned to 0 dB. Each center frequency is clearly labeled above the respective slide control.
- 2. LEFT & RIGHT SUBWOOFER/low frequency equalizer controls.** Each of the Left & Right Subwoofer Channels (or the L&R Front Low Frequency Bands if no subwoofer) have seven slide controls used to set the individual levels of the 1/3 octave spaced (25 Hz-100 Hz) constant-Q filters. Their range is  $\pm 6$  dB. As above, the grounded center-detent design ensures each filter is off when positioned to 0 dB. Each center frequency is clearly labeled above the respective slide control.
- 3. POWER indicator.** This blue LED lights any time remote power is supplied from the Rane model RS 1 power supply (included). To avoid confusion a distinction is made here between electrical and political power.
- 4. BYPASS switch & indicator.** This pushbutton switch activates the relay-controlled BYPASS function. Engaging the BYPASS switch (red BYPASS LED *on*) ties the INPUT connectors directly to their respective OUTPUT connectors (hard-wired). This switch is particularly useful in performing “A/B” comparisons between equalized and non-equalized sound. This switch does not bypass the subwoofer crossovers, only the equalizer sections. Use generously during set-up. During the initial timed power-up sequence, the SSE 35 automatically goes into BYPASS mode.

## REAR PANEL DESCRIPTION



- 1. Remote POWER supply input.** The unit is supplied from the factory with a Model RS 1 Remote Power Supply suitable for connection to this input jack. The power requirements of this unit call for an 18 volt AC center-tapped transformer *only*. **THIS IS NOT A TELEPHONE JACK. NEVER USE A POWER SUPPLY OTHER THAN THE ONE SUPPLIED OR A REPLACEMENT APPROVED BY RANE CORPORATION.** Using any other type of supply may damage the unit and void the warranty.
- 2. Ground LIFT switch.** This switch provides the ability to separate chassis ground and signal ground. Normally, this switch should be in the LIFT position. In some circumstances, moving this switch eliminates hum problems. *Always turn your amplifier levels down before changing this switch and bring them up slowly.*
- 3. Chassis ground.** A 6-32 screw used for chassis grounding purposes. See CHASSIS GROUNDING below.
- 4. LEFT, CENTER & RIGHT OUTPUT connectors.** Active unbalanced design. Use only high-grade RCA cables for connection to the power amplifier inputs.
- 5. LEFT, CENTER & RIGHT INPUT connectors.** Active unbalanced design. Use only high-grade RCA cables for connection to the surround sound decoder outputs.
- 6. SUBWOOFER OUTPUT connector.** Active unbalanced design. Use only high-grade RCA cables for connection to the subwoofer power amplifier input.
- 7. SUBWOOFER ENGAGE switches.** Pressing both of these switches to the *in* position and illuminating the red LEDs engages the crossovers and routes the low frequencies to the SUBWOOFER OUTPUTS.
- 8. SUB SOURCE switches.** These switches determine if the SUBWOOFER OUTPUT for each Channel gets its input from the Left, Right, or a summed Left/Right signal. Set these to LEFT and RIGHT for stereo subwoofers, and L&R when using a mono subwoofer.
- 9. Crossover FREQUENCY switches.** One each for Left and Right Channels. This sets the built-in 24 dB per octave crossover to only allow frequencies below 80 Hz or 125 Hz to the subwoofer(s) in each Channel, thereby improving subwoofer efficiency. If the subwoofer has a crossover frequency adjustment, set it to its highest value when using the SSE 35. Refer to the OPERATING INSTRUCTIONS on page Manual-6.

### CHASSIS GROUNDING

If after hooking up your system it exhibits excessive hum or buzzing, there is an incompatibility in the grounding configuration between units somewhere.

Units with outboard power supplies do NOT ground the chassis through the line cord. Make sure that these units are grounded either to another chassis which is earth grounded, or directly to the grounding screw on an AC outlet cover by means of a wire connected to a screw on the chassis with a star washer to guarantee proper contact.

Please refer to RaneNote 110 "Sound System Interconnection" (supplied in this manual) for further information on system grounding.

## SSE 35 CONNECTION

When first connecting the SSE 35, *leave the power supply for last*. This gives you a chance to correct mistakes before damaging fragile speakers, ears and nerves.

### INPUTS

Inputs are unbalanced and fitted with standard RCA phono jacks.

### OUTPUTS

The Outputs mimic the Inputs. Only use high-quality RCA cables for hook-up.

### SIGNAL LEVELS

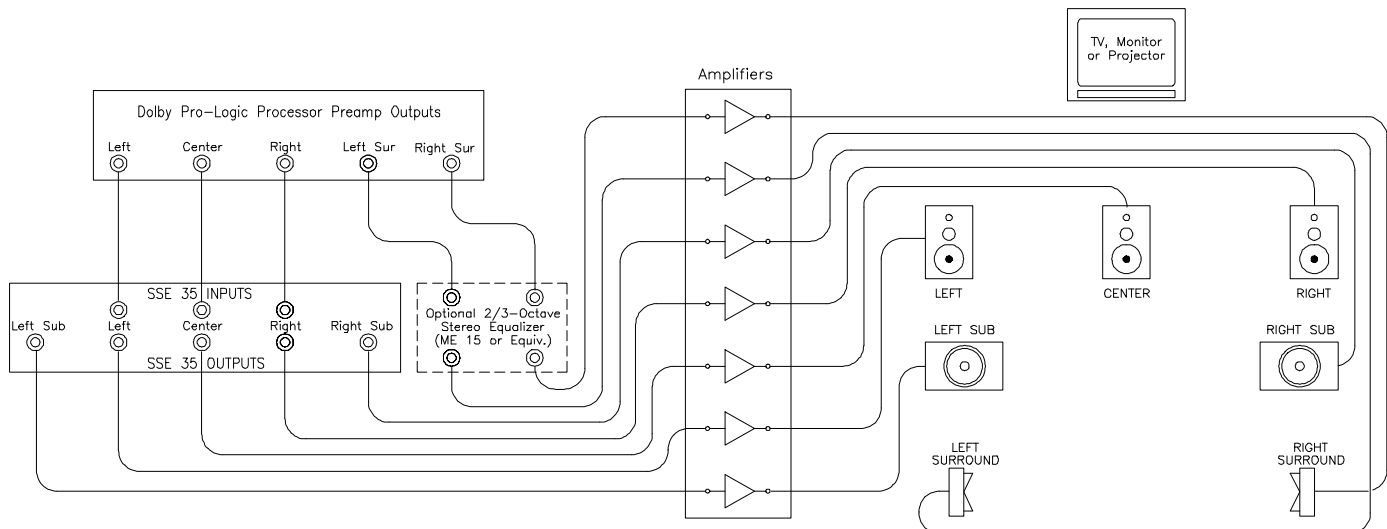
The SSE 35 is designed for Home Theater Audio reference levels, and provides a minimum headroom of 26 dB above reference, making it virtually unclippable.

With all slide controls located in their 0 dB detented positions, the SSE 35 operates with unity gain from input to output. No additional level controls are necessary. Use the SSE 35 only for specific equalization, not as a gain control. The average of all sliders should be 0 dB or less—volume should be relatively the same when activating the BYPASS switch. Try to cut rather than boost. Lowering the mountains makes less filling in the valleys.

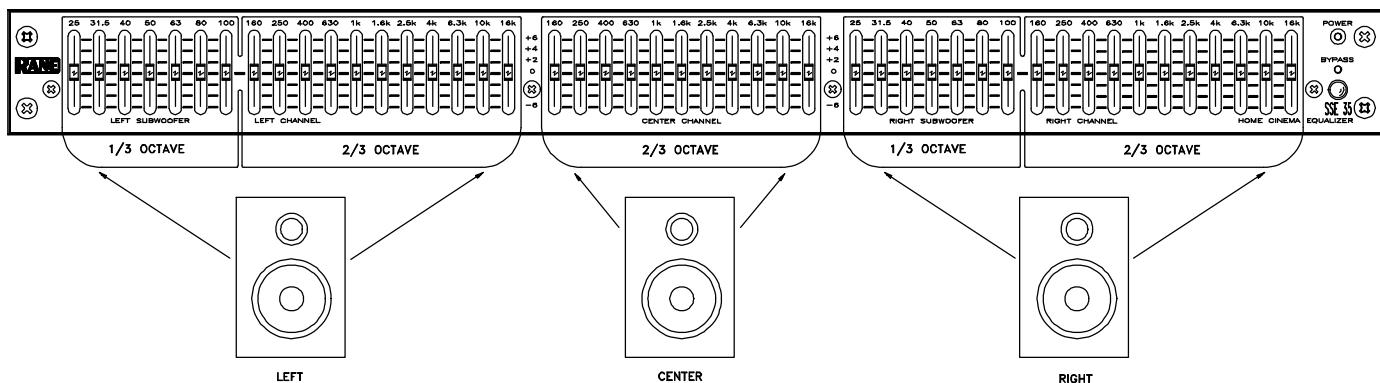
### ALIGNMENT (See *Operating Instructions*).

Once the room is aligned, purists will install the security cover and never adjust again until the room is re-arranged. Some of you will be impressed with all those little sliders and want to play. The choice is yours.

The SSE 35 comes ready for 19" rack mounting. The rack ears may be moved forward to allow the security cover to be mounted flush with the rack face. Simply remove the two philips screws on each rack ear and relocate them to the forward holes. If the unit is not to be rack mounted, attach the supplied rubber feet to four corners of the bottom of the unit to prevent scratching other components or shelving, and remove the ears if you like.

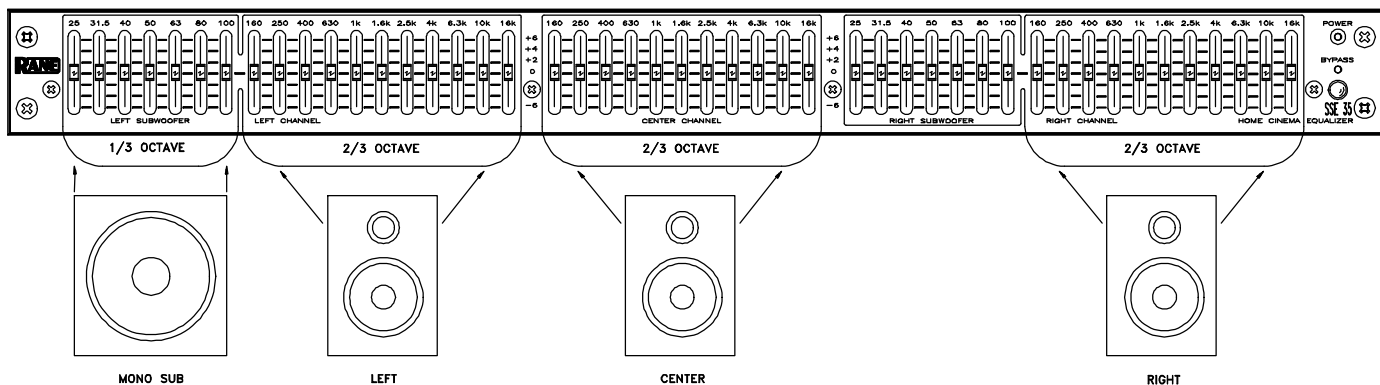


Typical System Connection Using Stereo Subwoofers



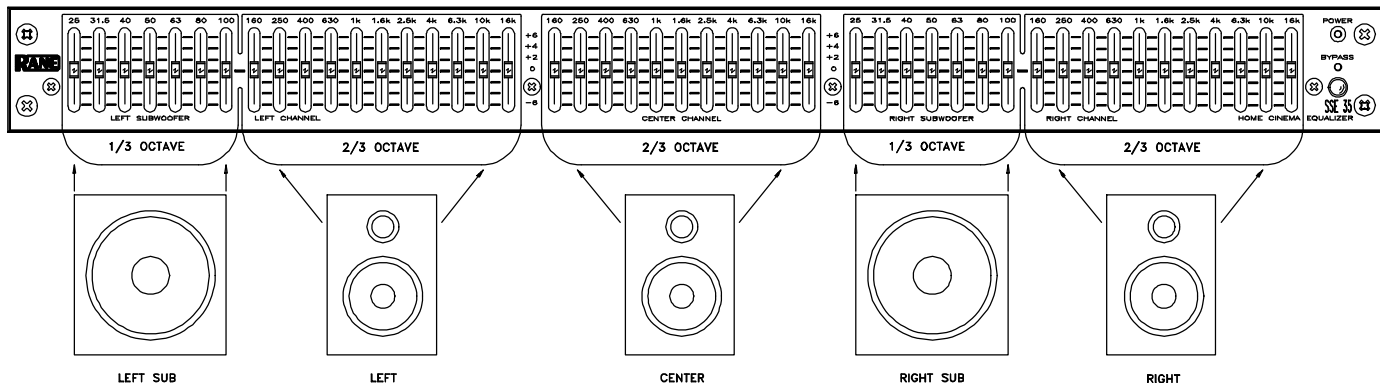
## No Subwoofer

In all Dolby Pro-Logic modes (except Center Wide or Large), all bass information is retained in the left and right channels. Only material above 100 Hz is routed to the center and surround channels. The SSE 35 provides 1/3 octave control of frequencies below 100 Hz in the Left and Right Channels, with 2/3 octave control of frequencies above 100 Hz in the Left, Center and Right Channels. Set the rear panel ENGAGE switches to the out position (see REAR PANEL #7).



## Mono Subwoofer

When a mono subwoofer is used with the SSE 35, use either the LEFT or RIGHT Subwoofer Output (LEFT in this example). Set both ENGAGE switches *in*, and the LEFT SOURCE to L&R (see REAR PANEL #7 and #8.) Only the Left set of 1/3 octave equalization affects subwoofer response.



## Stereo Subwoofers

With stereo subwoofers, the full potential of music and soundtracks is realized regardless of out-of-phase bass signals present in many recordings. Each subwoofer receives separate 1/3-octave control. Set both ENGAGE switches *in*, and each SOURCE switch to LEFT and RIGHT (see REAR PANEL #7 and #8.)

# OPERATING INSTRUCTIONS

## DOLBY PRO-LOGIC AUDIO SYSTEM ALIGNMENT

The SSE 35 is for Dolby Pro-Logic systems, where Left, Center and Right Channels should have matched response. Though the SSE 35 helps a great deal,  $\pm 6$  dB boost/cut may not be enough to compensate between vastly different speaker brands, models and designs. For best results, choose left, center and right speakers that have a similar sound, and let the SSE 35 do the “fine tuning.” Use a one-third octave real-time analyzer and a sound pressure meter to “flatten” the system as described in the analyzer or meter manual or the RaneNote on “Home Theater Systems” included in this manual. Start with the Center Channel first, then match the other Channels.

Use the Pro-Logic decoder’s NORMAL mode when using the SSE 35. Normal mode directs all common or mono information above 100 Hz from the Left and Right Channels to the Center Channel.

## SETTING UP THE CROSSOVER

When using one or two subwoofers, press both ENGAGE switches in and the LEDs will light up. This routes the signal through the crossovers and into the low frequency equalizer to the separate subwoofer outputs.

When using one subwoofer or a pair or mono subwoofers, set both SOURCE switches to L&R. When using stereo subwoofers, set the SOURCE switches to LEFT and RIGHT respectively.

Setting of the CROSSOVER FREQUENCY depends on the type of speakers being used. Small left, center and right speakers will not produce much bass in themselves, and require the higher subwoofer setting of 125 Hz. Larger or full range left, center and right speakers will sound better with the setting of 80 Hz. You may wish to experiment and use your ears to determine the best position for this switch. If the subwoofer(s) have their own crossover, set the subwoofer's crossover frequency as high as possible, allowing the 24 dB crossover in the SSE 35 to do all the work.

If any THX® speakers are used for either mains or subwoofer, use the 80 Hz setting. However, if a THX *processor* is being used, we recommend not using the crossover in the SSE 35 and using the crossover in the processor — in this case do not depress the ENGAGE switches or use the SSE 35 subwoofer outputs — connect your subwoofer to the processor directly.

The frequencies of the LEFT and RIGHT channels are not affected by the low frequency equalizer when the ENGAGE switches are depressed. This way, if the front speakers are capable of producing bass they will do so — along *with* the subwoofer.

## SETTING CURVES USING THE SSE 35

Rane’s unique constant-Q circuitry makes setting curves easy. With Rane graphic equalizers, for the most part what you see is what you get — unlike previous equalizer designs where the bandwidth changes with the slider positions. With a constant-Q equalizer, only frequencies within each band are affected, allowing greater accuracy and control.

Place the speakers first, then analyze and equalize. Referring to analyzer room curves, begin by positioning the sliders to create the inverse curve shown by the instrumentation. Remember, most applications require only a few dB of boost or cut. If more is required, use architectural and mechanical means: change, add, remove, or relocate acoustically sensitive items (speakers, drapes, carpets, mirrors, etc.) as required.

## USING THE BYPASS SWITCH

The SSE 35 provides an equalizer BYPASS switch & indicator as a useful tool for optimizing settings. Use the BYPASS switch for making quick “A-B” comparisons, that is, comparing “A”, equalized (BYPASS out, LED *off*), versus “B”, unequalized (BYPASS in, LED *on*). To do this freely, without danger of system damage, you must first pay attention to how much equalization is being used. Try for an average of 0 dB for all sliders in a channel.

Since the SSE 35 always operates at unity gain in the BYPASS mode, comparison after a lot of boosting or cutting can result in startling level differences. Therefore you want to keep the system level down until you first use the BYPASS switch. *Be very careful the first time you use it.*

The crossover remains active regardless of the position of the BYPASS switch. Keep this in mind when making comparisons and listening to the subwoofer range. Only the equalizers are bypassed.

## MONO OR STEREO SUBWOOFERS? SUBWOOFER PLACEMENT? EQUALIZING SURROUNDS?

Read the discussions in RaneNote 132 “Home Theater Systems” included in this manual.

## SSE 35 Features & Specifications

Parameter	Specification	Limit	Units	Conditions/Comments
LCR Equalizers: Bands	(11) 2/3-Octave ISO Spacing	0.25	mm dB	From 160 Hz to 16 kHz
.....Type	Constant-Q			3% Accuracy to center frequency
.....Travel	20			Positive grounded center detent
.....Range	±6	0.25	mm dB	Left & Right Subwoofers
LR Subwoofer Equalizers:	(7) 1/3-Octave ISO Spacing			From 25 Hz to 100 Hz
.....Bands	Constant-Q			3% Accuracy to center frequency
.....Type	20	0.25	mm dB	Positive grounded center detent
.....Travel	±6			
.....Range				
Subwoofer LP Crossovers:		1%	Hz	Left & Right low pass filters
.....Type	4th-Order Butterworth			Slide switch selectable
.....Frequency	80 or 125			4th-order
.....Slopes	24 dB/Octave	1	Ohms	RCA phono connectors
Inputs: Type	Active Unbalanced			
.....Impedance	10k			
.....Maximum Level	+20	1	dBu	11 Volts peak
Outputs: Type	Active Unbalanced			RCA phono connectors
.....Impedance	100			
.....Maximum Level	+20	±1	dB	11 Volts peak into 2k ohms or greater
Frequency Response	20-20 kHz			Left, Right & Center
THD+Noise	0.001	typ	%	1 kHz, +4 dBu
	0.015			20-20 kHz, +4 dBu
SMPTE IM	0.01			60 Hz / 7 kHz, 4:1, +4 dBu
Signal-to-Noise	100	1	dB	re +4 dBu; 20 kHz BW; flat
Dynamic Range	116			Max out / noise floor (+20 dBu/-96 dBu)
Channel Separation	80			1 kHz
Unit: Agency Listing		typ	dB	
.....120 VAC model	Class 2 Equipment			National Electrical Code
	UL 813 Exempt			Class 2
	CSA Exempt	10%	Vrms	Class 2
.....230 VAC model	VDE, SELV			Safety Extra Low Voltage
	CE-EMC			EMC directive 89/336/EEC
	CE-Safety Exempt	max	mA	Per article 1 of LVD 73/23/EEC
Power Supply: Agency Listing	Model RS 1			
.....120 VAC model	UL Listed			File no. E88261
	CSA Certified	w/o Rack Ears		File no. LR58948
.....230 VAC model	CE-EMC			EMC directive 89/336/EEC
	CE-Safety			LV directive 73/23/EEC
Power Supply: Input	18 VAC w/center tap	10%	Vrms	6-pin mod plug
.....Current	750			RMS current from remote supply
Unit: Size	1.75"H x 17.3"W x 8"D			(4.4 cm x 43.9 cm x 20.3 cm)
.....Weight	5 lb			(2.3 kg)
Shipping: Size	7" x 22" x 13"			(18 cm x 56 cm x 33 cm)
.....Weight	9 lb			(4.1 kg)
Note: 0 dBu=0.775 Vrms				

# Block Diagram

